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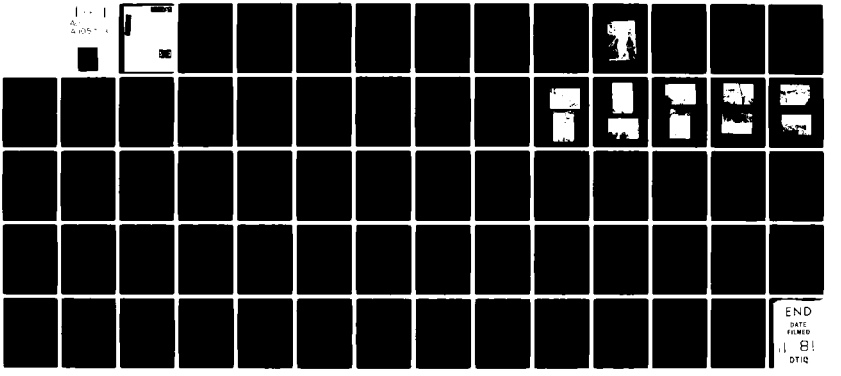

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REPORT DOCUMENTATION PAGE

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National Dam Safety Program. Stump Pond Dam (Inventory Number 746), Susquehanna River Basin, Cortland County, New York. Phase I Inspection Report

18. SUPPLEMENTARY NOTES

N.Y.

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Dam Safety
National Dam Safety Program
Visual Inspection
Hydrology, Structural Stability
Stump Pond Dam
Cortland County
Susquehanna River Basin

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report provides information and analysis on the physical condition of the dam as of the report date. Information and analysis are based on visual inspection of the dam by the performing organization.

Visual inspection of this dam and engineering analyses revealed that the poor condition of the dam creates a hazard to human life and property. As a result of these determinations, the dam has been assessed as "unsafe, non-emergency."

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

One of the spillway sections has failed completely, creating a large void in the dam. The other spillway channel is in poor condition, having cracks in the concrete and several small voids. The earth fill upstream of the dam completely blocks the failed spillway section and partially blocks the other section.

Using the Corps of Engineers' Screening Criteria for initial review of the spillway adequacy, it has been determined that the structure would be overtopped for all storms exceeding 10% of the Probable Maximum Flood (PMF). Due to the condition of the structure, it is questionable as to whether it could withstand a substantial flow over the crest. Another large void on the left end of the dam would be a likely problem area if overtopping were to occur. Since failure of the dam would increase the hazard from that which would exist just prior to the failure, the spillway is adjudged to be seriously inadequate.

Due to the serious nature of the deficiencies, it is recommended that within 30 days of the notification to the owner that the dam has been assessed as unsafe, repair work on the structural deficiencies should be commenced. These repairs should be completed within 3 months.

Within 3 months of the notification of the owner, a detailed hydrologic/hydraulic investigation should be commenced. This investigation should accurately define the site specific characteristics of the watershed and determine appropriate mitigating measures to be taken in response to the seriously inadequate spillway capacity. These measures should be completed within 1 year of the date of notification.

Other deficiencies noted should also be corrected within 1 year. Among these deficiencies are [illegible] the downstream slopes of the right abutment, trees growing at the downstream toe, cracked concrete on the abutments at the ends of the spillway, no reservoir drain, and the lack of an emergency action plan.

PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I Investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation, and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I Investigation; however, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through frequent inspections can unsafe conditions be detected and only through continued care and maintenance can these conditions be prevented or corrected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the Spillway Test flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. Because of the magnitude and rarity of such a storm event, a finding that a spillway will not pass the test flood should not be interpreted as necessarily posing a highly inadequate condition. The test flood provides a measure of relative spillway capacity and serves as an aide in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
STUMP POND DAM
I.D. No. NY 746
CORTLAND COUNTY, NEW YORK

TABLE OF CONTENTS

Phase I Inspection Report
National Dam Safety Program

Name of Dam:	Stump Pond Dam I.D. No. NY 746
State Located:	New York
County Located:	Cortland
Watershed:	Susquehanna River Basin
Date of Inspection:	October 23, 1980

ASSESSMENT

Visual inspection of this dam and engineering analyses revealed that the poor condition of the dam creates a hazard to human life and property. As a result of these determinations, the dam has been assessed as "unsafe, non-emergency."

One of the spillway sections has failed completely, creating a large void in the dam. The other spillway channel is in poor condition, having cracks in the concrete and several small voids. The earth fill upstream of the dam completely blocks the failed spillway section and partially blocks the other section.

Using the Corps of Engineers' Screening Criteria for initial review of the spillway adequacy, it has been determined that the structure would be overtopped for all storms exceeding 10% of the Probable Maximum Flood (PMF). Due to the condition of the structure, it is questionable as to whether it could withstand a substantial flow over the crest. Another large void on the left end of the dam would be a likely problem area if overtopping were to occur. Since failure of the dam would increase the hazard from that which would exist just prior to the failure, the spillway is adjudged to be seriously inadequate.

Due to the serious nature of the deficiencies, it is recommended that within 30 days of the notification to the owner that the dam has been assessed as unsafe, repair work on the structural deficiencies should be commenced. These repairs should be completed within 3 months.

Within 3 months of the notification of the owner, a detailed hydrologic/ hydraulic investigation should be commenced. This investigation should accurately define the site specific characteristics of the watershed and determine appropriate mitigating measures to be taken in response to the seriously inadequate spillway capacity. These measures should be completed within 1 year of the date of notification.

Other deficiencies noted should also be corrected within 1 year. Among these deficiencies are erosion along the downstream slopes of the right abutment, trees growing at the downstream toe, cracked concrete on the abutments at the ends of the spillways, no reservoir drain, and the lack of an emergency action plan.

George Koch
Chief, Dam Safety Section
New York State Department
of Environmental Conservation
NY License No. 45937

Approved By:

Colonel W. M. Smith Jr.
New York District Engineer

Date: 23 MAR 1984

OVERVIEW
STUMP POND DAM
I.D. No. NY-746

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
STUMP POND DAM I.D. NO. NY 746
DEC #95A-4270 SUSQUEHANNA RIVER BASIN
CORTLAND COUNTY, NEW YORK

SECTION 1: PROJECT INFORMATION

1.1 GENERAL

a. Authority

The Phase I inspection reported herein was authorized by the Department of the Army, New York District, Corps of Engineers, to fulfill the requirements of the National Dam Inspection Act, Public Law 92-367.

b. Purpose of Inspection

This inspection was conducted to evaluate the existing conditions of the dam, to identify deficiencies and hazardous conditions, to determine if these deficiencies constitute hazards to life and property, and to recommend remedial measures where required.

1.2 DESCRIPTION OF PROJECT

a. Description of Dam

The Stump Pond Dam is a laid up stone structure with an earth fill upstream of the main dam.

The dam is approximately 100 feet long and a maximum of 15 feet high. The stone dam is exposed on the downstream face. The dam consists of two spillway sections each about 15 feet wide. These spillway sections are in the center of the structure. At either end there is a laid up stone segment which ties into natural ground. The laid up stone is founded on a concrete footing of unknown thickness. The earth fill segment, upstream of the main dam, was apparently added sometime after the initial construction of the dam.

The spillway has two adjoining sections each approximately 15 feet wide. A 2.5 foot wide concrete corewall on the upstream face forms the spillway crest. The earth fill has partially blocked the left channel and completely blocked the right channel.

b. Location

This dam is located in the Town of Willet, off New York State 41, approximately 1½ miles southeast of the Village of Willet. The dam is situated on Willet Creek.

c. Size Classification

The dam is 15 feet high and has a maximum storage capacity of 200 acre-feet. Therefore, the dam is in the small size capacity as defined by the "Recommended Guidelines for Safety Inspection of Dams."

d. Hazard Classifications

This dam is classified as "high" hazard due to the presence of several homes and trailers located downstream of the dam in the hamlet of Georgetown.

e. Ownership

The dam is owned by Mr. William Sudbrink, P.O. Box 42, Willet, New York 13863.

f. Purpose of Dam

The dam is used to maintain the water surface of Stump Pond for recreational purposes.

g. Design and Construction History

No information was available concerning the design or construction of this dam.

h. Normal Operating Procedures

There are no prescribed operating procedures for this structure.

1.3 PERTINENT DATA

a. Drainage Area (acres)	870
b. Discharge at Dam (cfs)	
Open Spillway Channel (W. S. at top of dam)	135
c. Elevation (USGS Datum)	
Top of Dam	1265
Spillway Crest	1262
d. Reservoir-Surface Area (acres)	
Top of Dam	59
Spillway Crest	39
e. Storage Capacity (acre-feet)	
Top of Dam	260
Spillway Crest	200

f. Dam

Type: Laid up stone with earth fill on upstream side

Dam Length (ft.)	100
Crest Width (ft.)	8.5

g. Spillway

Type: Uncontrolled rectangular concrete weir. Crest formed by 2.5 foot wide concrete core wall on upstream face.

Length:(ft.):	Left Channel	15.2
	Right Channel (blocked)	15

h. Reservoir Drain - None

SECTION 2: ENGINEERING DATA

2.1 GEOTECHNICAL DATA

a. Geology

The Stump Pond Dam is located in the Glaciated Allegheny Plateau physiographic province of New York State. This plateau is underlain by a great thickness of sedimentary rocks from the Devonian Era which lie almost horizontal. Severe trenching by streams and glacial erosion has carved the upland into a rugged terrain. The Susquehanna Hills rise to elevations of 1,700 to 2,000 feet between the rolling, relatively narrow valleys. The surficial soils and features of the area are the result of glaciations during the Cenozoic Era, the last of which was the Wisconsin glaciation.

A review of the "Brittle Structures Map of the State of New York" indicated that there are no faults in the immediate vicinity of the dam.

2.2 DESIGN RECORDS

No records were available concerning the design of this structure.

2.3 CONSTRUCTION RECORDS

No construction records were available.

2.4 OPERATION RECORDS

No operation records were available.

2.5 EVALUATION OF DATA

Data available for the preparation of this report was very limited. Most of the information used was based on measurements made at the time of the inspection. The Phase I inspection report was prepared using the limited data plus certain qualifying assumptions.

SECTION 3: VISUAL INSPECTION

3.1 FINDINGS

a. General

Visual inspection of the Stump Pond Dam was conducted on October 23, 1980. The weather was clear and sunny with the temperature in the forties. The water surface at the time of the inspection was 4 inches above the spillway crest. Water was flowing over the spillway and debris was blocking the entrance to the channel at the upstream face of the dam.

b. Dam

A number of serious deficiencies were noted on this structure. Among these deficiencies were the following:

1. The right spillway section had failed completely. The concrete and stones which originally formed the crest were no longer in place and a large void extended across the 15 foot width of the channel (see photo 1). Stones had been removed down to about 3 feet below the original spillway crest. The void extended from the downstream face to approximately 3 feet into the structure (see photo 2).

2. The left spillway section was in poor condition. The concrete on the crest was cracked and deteriorated. The concrete slab on the upstream apron was separated from the concrete on the crest (see photo 3). At the time of the inspection, the water was flowing into this crack and down through the laid up stone rather than over the spillway. There were two small voids in this section, each approximately 1 foot deep. One void was near the center of the section and the other at the right end. The pier which separates the two spillway channels was undermined and cracked (see photo 4).

3. The earth fill which had been placed upstream of the laid up stone section completely blocked the right spillway channel and partially blocked the other (see photo 5). The opening in front of the right channel was about 10 feet wide and 2 feet deep. The spillway capacity of this structure was limited by this opening.

4. There was another large void in the laid up stone on the left end of the dam. This void was about 6 feet wide by 5 feet deep (see photo 6). At the crest, the width of the stone remaining in this area was about 18 inches.

5. A bulge was noted in the laid up stone segment below the spillway section (see photo 7).

6. The stones at the right end of the dam were displaced upward above the horizontal with respect to the remainder of the dam (see photo 8).

7. The right abutment slope on the downstream face of the dam was very steep. There was a potential for surface runoff to cause erosion

problems in this area, further jeopardizing the stability of the dam. There were a number of trees and tree stumps along the downstream toe of the dam. Roots from these trees extended into the dam, creating additional stability problems.

9. There was apparently no reservoir drain. A 1 foot square opening was noted at the downstream toe, but this only extended a few feet into the dam.

10. The concrete abutment at the left end of the left spillway was cracked and deteriorated (see photo 10). There were both horizontal and vertical cracks on this abutment.

c. Downstream Channel

The channel immediately downstream of the dam was narrow and tree lined.

d. Reservoir

There was no indication of soil instability in the reservoir area. There appears to have been substantial sedimentation in the vicinity of the dam.

3.2 EVALUATION OF OBSERVATIONS

The overall condition of this dam is poor. A number of deficiencies exist which pose a threat to the stability of the structure. The following items were the most serious deficiencies noted:

a. Large voids on the right spillway section and on the left end of the dam.

b. Overall deterioration of the left spillway section, including cracked concrete and voids in the channel.

c. The earth fill severely limits spillway capacity.

d. A bulge in the laid up stone segment.

e. Trees and tree stumps along the downstream toe of the dam.

f. Deteriorated and cracked concrete on the left abutment of the left spillway.

SECTION 4: OPERATION AND MAINTENANCE PROCEDURES

4.1 PROCEDURES

There are no operating procedures for this dam.

4.2 MAINTENANCE OF DAM

No regular maintenance is performed on this structure.

4.3 WARNING SYSTEM IN EFFECT

No apparent warning system for evacuation of downstream residents is present.

4.4 EVALUATION

The operation and maintenance procedures on this dam are unsatisfactory. The overall poor condition of the dam is evidence of the deficiency in the maintenance procedures.

SECTION 5: HYDRAULIC/HYDROLOGIC

5.1 DRAINAGE AREA CHARACTERISTICS

Delineation of the watershed draining into the reservoir pool area was made using the USGS 7½ minute quadrangle sheets for Willet and Smithville Flats, New York. The 870 acre drainage area consists of open fields and wooded lands. Relief in the drainage area is moderate to steep with slopes ranging from 8 to 31 percent.

5.2 ANALYSIS CRITERIA

The analysis of the floodwater retarding capability of this dam was performed using the Corps of Engineers HEC-1 computer program, Dam Safety version. This program develops an inflow hydrograph using the "Snyder Synthetic Unit Hydrograph" method and then uses the "Modified Puls" flood routing procedure. The spillway design flood selected was the PMF in accordance with the Recommended Guidelines of the U.S. Army Corps of Engineers.

5.3 SPILLWAY CAPACITY

The dam has two ungated spillway channels. One of the spillway channels has been completely blocked by the earth fill which has been placed on the upstream face of the dam. The earth fill blocks a portion of the left spillway channel as well. The result is that the spillway capacity is controlled by the 10 foot wide channel through the earth fill. The spillway was analyzed as a broad crested weir with a discharge coefficient (c) of 2.6.

5.4 RESERVOIR CAPACITY

Normal storage capacity of the reservoir with the water surface at the spillway crest is 200 acre feet. Surcharge storage capacity between the spillway crest and the top of the dam is 60 acre feet, which is equivalent to a runoff depth of 0.83 inches over the drainage area.

5.5 FLOODS OF RECORD

No information was available regarding the occurrence of the maximum known flood.

5.6 OVERTOPPING POTENTIAL

Analysis using the PMF and one-half the PMF indicates that the dam does not have sufficient spillway capacity. The inflow from the PMF is 2632 cfs and for one-half the PMF the inflow is 1316 cfs. For a PMF peak outflow of 2582 cfs, the dam would be overtopped to a computed depth of 4.4 feet. For the peak outflow of one-half the PMF, the depth of overtopping would be 2.6 feet. All storms exceeding 10% of the PMF will result in the dam being overtopped. The spillway in its present configuration only has sufficient capacity to discharge 135 cfs.

5.7 EVALUATION

Using the Corps of Engineers screening criteria for initial review of spillway adequacy, it has been determined that the dam would be overtopped by all storms exceeding 10% of the PMF. Since a failure of the dam would increase the hazard to the downstream residents over that which would exist just prior to the failure, the spillway capacity is adjudged to be seriously inadequate.

SECTION 6: STRUCTURAL STABILITY

6.1 EVALUATION OF STRUCTURAL STABILITY

a. Visual Observations

Visual observations revealed that the structure is in poor condition. There were two locations where substantial voids had developed in the structure. These voids were caused by the structure unravelling, probably due to overtopping. There were also indications of distress at the right abutment. The lines formed by the stones across the dam were no longer horizontal but were displaced upward. A slight outward bulge was noted in the lower portion of the structure near the center of the spillway section.

b. Data Review and Stability Evaluation

There were no plans available from which information needed to perform a stability analysis could be obtained. Due to this lack of information and due to the type of structure, a stability analysis was not considered feasible.

SECTION 7: ASSESSMENT/RECOMMENDATIONS

7.1 ASSESSMENT

a. Safety

The Phase I inspection of the Stump Pond Dam revealed the dam to be in poor condition with several serious deficiencies. The right spillway section has failed, creating a large void in this part of the dam. Another large void exists on the left end of the dam. There were several smaller voids and overall deterioration on the left spillway channel. The earth fill on the upstream face has resulted in severely limited spillway capacity. Engineering investigations indicate that the spillway capacity is seriously inadequate (unable to discharge the outflow of 1/2 the PMF). Due to the deficiencies which exist on this structure, the dam has been assessed as "unsafe."

b. Adequacy of Information

There was very little information available for the preparation of this report. Most of the information used was obtained from observations and measurements made at the time of the inspection.

c. Need for Additional Investigations

A number of the deficiencies on this structure were related to the stability of the dam. Due to insufficient data, no stability analysis was performed for this dam. An overall analysis of the stability of the structure is required to determine the cause of the bulge on the downstream face and if modifications to the dam are needed.

Since the spillway was assessed as seriously inadequate, additional hydrologic/hydraulic investigations are required to more accurately determine the site specific characteristics of the watershed. Remedial measures for increasing the spillway capacity are then required.

d. Urgency

Due to the poor condition of this structure, it should be given immediate attention. Within 30 days of the notification to the owner that the dam has been classified as unsafe, repair work on the structural deficiencies (voids on spillway and dam, cracked concrete, etc.), should be commenced. These repairs should be completed within 3 months.

The additional detailed hydrologic/hydraulic investigations should be commenced within 3 months of the date of notification of the owner. A stability analysis for the structure should be commenced within 6 months.

Mitigating measures deemed necessary as a result of the investigations and repairs required should be completed within 1 year of the date of notification.

7.2 RECOMMENDED MEASURES

a. Repair large voids which exist on the right spillway channel and on the left end of the dam.

b. Repair the left spillway channel, including cracked concrete and voids in the channel.

c. Remove the pier between the two spillway channels.

d. Remove the earth fill in front of spillway channels down to the level of the spillway crest.

e. Provide additional spillway capacity as a result of detailed hydrologic/ hydraulic investigations.

f. Direct surface runoff away from right abutment slope on downstream face to prevent erosion of the slope.

g. Cut trees along downstream toe of the dam.

h. Make modifications to the sturcture deemed necessary as a result of the stability analysis.

i. Repair cracked concrete abutments on either end of the spillway.

j. Provide a reservoir drain to permit the controlled lowering of the impoundment.

k. Develop an emergency action plan for the notification of downstream residents.

APPENDIX A

PHOTOGRAPHS

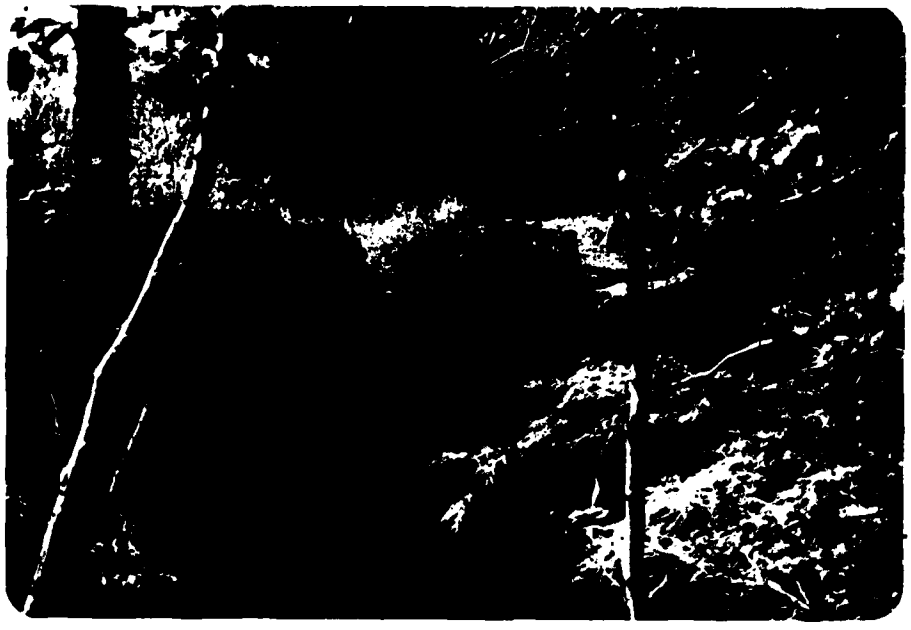


Photo 1 - Failed Right Spillway Section

Photo 2 - Close-up View of Failed Spillway Section

Photo 3 - Left Spillway Section; Note Separation Between Concrete W ll and Spillway Slab

Photo 4 - Undermined Pier Between Spillway Sections

Photo 5 - Earth Fill Upstream of Dam

Photo 6 - Void on Downstream Face at Left End of Dam

Photo 7 - Downstream Face of Dam -- Note Slight Bulge in Middle and Trees Growing Along Toe

Photo 8 - Downstream Face of Dam -- Note Tilting Stones to Left and Concrete Footing at Base of Dam

Photo 9 - Downstream of Dam -- Trees Growing Along Toe

Photo 10 - Cracked Abutment at Left End of Spillway

APPENDIX B

VISUAL INSPECTION CHECKLIST

93-15-3(9/80)

VISUAL INSPECTION CHECKLIST

1) Basic Data

a. General

Name of Dam STUMP POND DAM

Fed. I.D. # 746 DEC Dam No. 95A-4270

River Basin SUSQUEHANNA

Location: Town WILLET County CORTLAND

Stream Name WILLET CREEK

Tributary of OTSELIC RIVER

Latitude (N) 42° 27.7' Longitude (W) 75° 53.5'

Type of Dam LAID UP STONE & EARTH FILL

Hazard Category C

Date(s) of Inspection 10/23/80

Weather Conditions 40° SUNNY CLEAR

Reservoir Level at Time of Inspection 4" ABOVE SPILLCREST

b. Inspection Personnel W. C. LYNCH ; R. L. WARRENDER

c. Persons Contacted (Including Address & Phone No.)

d. History:

Date Constructed ? Date(s) Reconstructed

Designer UNKNOWN

Constructed By UNKNOWN

Owner WILLIAM SUDBRINK P.O. BOX 42, WILLET, N.Y.

93-15-3(9/80)

2) Embankment

a. Characteristics

(1) Embankment Material TILL TYPE MATERIAL

(2) Cutoff Type NONE

(3) Impervious Core NONE

(4) Internal Drainage System NONE

(5) Miscellaneous EARTH FILL APPEARS TO HAVE BEEN PLACED AFTER CONSTRUCTION OF DAM EITHER TO CUT SEEPAGE OR FORM ROAD

b. Crest

(1) Vertical Alignment VERY IRREGULAR - RESULT OF OVERTOPPING. 2 LOW SPOTS - ONE IN FRONT OF FAILED SECTION - THE OTHER IS OPEN CHANNEL WHICH NOW ACTS AS SPILLWAY - ABOUT 10' WIDE & 2' DEEP.

(2) Horizontal Alignment OKAY

(3) Surface Cracks SOME IN ERODED AREAS OF OVERTOPPING (ACTING TO WIDEN OPEN CHANNEL)

(4) Miscellaneous WATER FLOWS THROUGH LOW AREA & OVER SOME TYPE OF LIP WHICH IS SEPARATED FROM MAIN SPILLWAY SECTION & PLUNGES INTO DAM - NOT OVER SPILLWAY

c. Upstream Slope

(1) Slope (Estimate) (V:H) FLAT

(2) Undesirable Growth or Debris, Animal Burrows SOME BRUSH

(3) Sloughing, Subsidence or Depressions DEPRESSIONS RELATING TO CREST DEPRESSIONS

(4) Slope Protection SOME STONE ON SLOPE BUT GENERALLY UNPROTECTED

(5) Surface Cracks or Movement at Toe

d. Downstream Slope

(1) Slope (Estimate - V:H) ESTIMATED VERTICAL - UP AGAINST MASONRY DAM

(2) Undesirable Growth or Debris, Animal Burrows N/A

(3) Sloughing, Subsidence or Depressions N/A

(4) Surface Cracks or Movement at Toe N/A

(5) Seepage N/A

(6) External Drainage System (Ditches, Trenches; Blanket) N/A

(7) Condition Around Outlet Structure N/A

(8) Seepage Beyond Toe N/A

e. Abutments - Embankment Contact

STEEP ABUTMENTS - CONTACT APPEARS TO BE SATISFACTORY

93-15-3(9/80)

(1) Erosion at Contact SOME EROSION FROM RUNOFF AT DOWNSTREAM CONTACT - STEEP ABUTMENT AT D.S. RIGHT ABUTMENT HAS POTENTIAL TO BE AN EROSION PROBLEM

(2) Seepage Along Contact _____

3) Drainage System

a. Description of System NONE

b. Condition of System _____

c. Discharge from Drainage System _____

4) Instrumentation (Momumentation/Surveys, Observation Wells, Weirs, Piezometers, Etc.) NONE

93-15-3(9/80)

5) Reservoir

a. Slopes FLAT

b. Sedimentation APPEARS TO BE CONSIDERABLE SILTATION NEAR THE DAM

c. Unusual Conditions Which Affect Dam STUMPS STICKING UP THRU LAKE SEEM TO INDICATE THAT LAKE IS SHALLOW

6) Area Downstream of Dam

a. Downstream Hazard (No. of Homes, Highways, etc.) HAMLET OF GEORGETOWN 3 HOUSES 1 TRAILER - VILLAGE OF WILLET

b. Seepage, Unusual Growth NONE

c. Evidence of Movement Beyond Toe of Dam NONE

d. Condition of Downstream Channel TREES IN FAIRLY NARROW CHANNEL

7) Spillway(s) (Including Discharge Conveyance Channel)

2 CHANNELS - ONE OF WHICH HAS FAILED - EARTH FILL HAD BEEN PLACED UPSTREAM OF BOTH BUT IT IS NOW OPEN IN FRONT OF LEFT SPILLWAY

a. General PIER WHICH SEPARATES THE LEFT & RIGHT CHANNELS IS CRACKED & ALMOST COMPLETLY UNDERMINED.

b. Condition of ~~Service~~ LEFT Spillway CONCRETE OVER STONE, WATER NOW FLOWING OVER 2' WIDE CONCRETE LIP & DROPPING INTO LAID UP STONE. 2 VOIDS IN THIS SECTION ONE NEAR CENTER OF SECTION, THE OTHER AT RIGHT END. STONES AT DOWNSTREAM FACE OVERHANG THE LAID UP STONE DAM.

c. Condition of ~~Auxiliary~~ RIGHT Spillway - LOOKS LIKE IT WAS ORIGINALLY THE SAME AS LEFT ONE - NOW IT HAS FAILED. SEMICIRCULAR VOID ABOUT 3' DEEP & 3' WIDE - STONES OF DAM HAVE JUST PEELED OFF - SEE PHOTOS - EARTH FILL PREVENTS WATER FROM FLOWING IN THIS CHANNEL

d. Condition of Discharge Conveyance Channel STONE FILLED - TREE LINED

8) Reservoir Drain/Outlet

NO DRAIN APPARENT - A 1' SQUARE OPENNING WAS NOTED ON DOWNSTREAM FACE BUT IT ONLY EXTENDED A FEW FEET INTO THE DAM - ROOTS FROM ADJACENT TREES WERE GROWING THROUGH DAM & INTO THIS OPENING.

9) Structural

a. Concrete Surfaces CRACKED DETERIORATED; VOIDS ON CONCRETE ON LEFT SPILLWAY CHANNEL

b. Structural Cracking YES - PIER & ABUTMENTS OF SPILLWAY HAVE CRACKING - CRACKS ON SPILLWAY SECTION AS WELL

c. Movement - Horizontal & Vertical Alignment (Settlement) ONE SLIGHT BULGE IN CENTER OF STRUCTURE - BELOW SPILLWAY SECTION. STONE SOMEWHAT TIPPING ON BOTH ENDS OF DAM - WORST ~~Junctions with Abutments or Embankments~~ ON RIGHT HAND END STONE IN CENTER IS PRETTY STRAIGHT

e. Drains - Foundation, Joint, Face NONE

f. Water Passages, Conduits, Sluices SEE SPILLWAY DESCRIPTION

g. Seepage or Leakage NONE NOTED - MASONRY SEEMS TO REST ON CONCRETE BASE - ONE VERTICAL CRACK IN BASE AT ABOUT CENTER OF DAM - SOME OF WATER DISAPPEARING INTO DAM SEEMS TO COME THROUGH HERE. UPON INCREASING FLOW OVER SPILLWAY FLOW UNDER & THROUGH DAM SEEMED TO SPREAD ACROSS WIDER AREA.

h. Joints - Construction, etc. NONE

i. Foundation CONCRETE - NO BEDROCK APPARENT AT DAM OR IN CHANNEL

j. Abutments VERY STEEP RIGHT ABUTMENT - SOME SURFACE EROSION

k. Control Gates NONE

l. Approach & Outlet Channels

m. Energy Dissipators (Plunge Pool, etc.) NONE

n. Intake Structures NONE

o. Stability QUESTIONABLE - AT ENDS IT ALMOST APPEARS THAT TREES ARE BUTRESSING DAMS - TREE ROOTS DO GO INTO DAM

p. Miscellaneous VOID AT LEFT END OF LEFT SPILLWAY ABOUT 5' DEEP FROM CREST & 2' WIDE - COMPLETE REMOVAL OF STONES IN THIS AREA - REMAINING DAM ONLY ABOUT 18" WIDE AT CREST. CAUSE OF THIS VOID IS UNCLEAR

APPENDIX C

HYDROLOGIC/HYDRAULIC ENGINEERING DATA AND COMPUTATIONS

CHECK LIST FOR DAMS
HYDROLOGIC AND HYDRAULIC
ENGINEERING DATA

AREA-CAPACITY DATA:

	Elevation (ft.)	Surface Area (acres)	Storage Capacity (acre-ft.)
1) Top of Dam	1265	59	260
2) Design High Water (Max. Design Pool)			
3) Auxiliary Spillway Crest	1262	39	200
4) Pool Level with Flashboards			
5) Service Spillway Crest			

DISCHARGES

	Volume (cfs)
1) Average Daily	–
2) Spillway @ Maximum High Water	135
3) Spillway @ Design High Water	
4) Spillway @ Auxiliary Spillway Crest Elevation	
5) Low Level Outlet	
6) Total (of all facilities) @ Maximum High Water	
7) Maximum Known Flood	
8) At Time of Inspection	0

CREST: ELEVATION: 1265

Type: EARTH & LAID UP STONE

Width: 8.5' Length: 100'

Spillover 2-CHANNELS 1-@FAILED & BLOCKED- 1-PARTIALLY BLOCKED

Location CENTER OF DAM

SPILLWAY:

SERVICE		AUXILIARY
1262	Elevation	
CONCRETE CREST	Type	
15.0'-(10' EFFECTIVE)	Width	
	Type of Control	
✓	Uncontrolled	
	Controlled:	
	Type (Flashboards; gate)	
	Number	
	Size/Length	
	Invert Material	
	Anticipated Length of operating service	
	Chute Length	
	Height Between Spillway Crest & Approach Channel Invert (Weir Flow)	

HYDROMETEROLOGICAL GAGES:

Type : NONE

Location: _____

Records:

Date - _____

Max. Reading - _____

FLOOD WATER CONTROL SYSTEM:

Warning System: NONE

_____

Method of Controlled Releases (mechanisms):

NONE

_____

DRAINAGE AREA: 870 ACRES

DRAINAGE BASIN RUNOFF CHARACTERISTICS:

Land Use - Type: FARM FIELDS & WOOD LANDS

Terrain - Relief: MODERATE TO STEEP

Surface - Soil: SOMEWHAT ROCKY

Runoff Potential (existing or planned extensive alterations to existing (surface or subsurface conditions)

NONE

Potential Sedimentation problem areas (natural or man-made; present or future)

APPEARS TO BE SUBSTANTIAL SEDEMENTATION

Potential Backwater problem areas for levels at maximum storage capacity including surcharge storage:

Dikes - Floodwalls (overflow & non-overflow) - Low reaches along the Reservoir perimeter:

Location: _____

Elevation: _____

Reservoir:

Length @ Maximum Pool _____ (Miles)

Length of Shoreline (@ Spillway Crest) _____ (Miles)

00-15-1 (3/78)
Formerly GA-17

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

PROJECT GRID

JOB	SHEET NO.	CHECKED BY	DATE
STUMP POND DAM	1		
SUBJECT		**COMPUTED BY**	**DATE**
HYDROLOGIC / HYDRAULIC COMPUTATIONS		RLW	10/27/80

DRAINAGE AREA - PLANIMETERED 8.40 IN² WILLSET QUAD

1.07 IN² SMITHVILLE FLATS QUAD

9.47 IN² = 8696 ACRES = 1,360 MI

SURFACE AREA - PLANIMETERED

ELEVATION 1262 → .42 IN² = 38.6 ACRES

SNYDER SYNTHETIC UNIT HYDROGRAPH

$L = 1.74$ mi $\quad L_{CA} = .87$ mi

PMP = 20.5 $\quad C_1 \rightarrow$ USE 2.0

$t_p = C_T (L \cdot L_{CA})^{.3} = 2.0[(1.74)(.87)]^{.3} = 2.26$ HOURS

$t_r = \frac{t_p}{5.5} = \frac{2.26}{5.5} = .41$ USE 15 minute hydrograph

$t_{pR} = t_p + .25(t_r - t_r) = 2.26 + .25(.25 - .41) = 2.22$

$TRSPC = T.F. = 1 - \frac{.3006}{(1.36)^{.1716}} = .717$

SPILLWAY CAPACITY - CHANNEL IN EARTH FILL

$L = 10'$

$Q = CL H^{3/2} = (2.6)(10)(3)^{1.5} = 135$ cfs

```
**********                                                    **********
FLOOD HYDROGRAPH PACKAGE (HEC-1)                              NEW YORK STATE
DAM SAFETY VERSION     JULY 1978                              DEPT OF ENVIRONMENTAL CONSERVATION
  LAST MODIFICATION  26 FEB 79                                FLOOD PROTECTION BUREAU
  MODIFIED FOR HONEYWELL APR 79
**********                                                    **********
    1              A1  STUMP  POND  DAM
    2              A2 PMF WITH RATIOS
    3              A3  OVERTOPPING ANALYSIS
    4              B    15C       0      15       0       0       0       0       2       0       0
    5              B1     5
    6              J      1       3       1
    7              J1    .1      .5     1.0
    8              K      C       1                                               1
    9              K1           INFLOW HYDROGRAPH
   10              M      1       1    1.36                               .717                    1
   11              P      C    20.5     111     123     132     142
   12              T                                                       1      .1
   13              W   2.22    .625
   14              X      2       2       1
   15              K      1       1                                               1
   16              K1        ROUTED HYDROGRAPH
   17              Y                                      1       1
   18              Y1     1                                                               -1262      -1
   19              Y4  1262    1263    1264  1264.5    1265
   20              Y5     C      26      73     103     135
   21              $S   20C     260
   22              $E  1262    1265
   23              $$  1262
   24              $D  1265     2.6     1.5      90
   25              K     99
   26              A
   27              A
   28              A
   29              A
   30              A
```

```
**********                                        **********
FLOOD HYDROGRAPH PACKAGE (HEC-1)                  NEW YORK STATE
DAM SAFETY VERSION      JULY 1978                 DEPT OF ENVIRONMENTAL CONSERVATION
  LAST MODIFICATION  26 FEB 79                    FLOOD PROTECTION BUREAU
  MODIFIED FOR HONEYWELL APR 79
**********                                        **********

RUN  DATE 02/11/81
                    STLMP  POND  DAM
                   PMF WITH RATICS
                    OVERTOPPING ANALYSIS

                                JOB SPECIFICATION
      NC      NHR      NMIN     IDAY      IHR      IMIN     METRC     IPLT     IPRT    NSTAN
     15C        0        15        0        0         0         0        2        0        0
                                JOPER      NWT    LROPT    TRACE
                                    5        0        0        0


                          MULTI-PLAN ANALYSES TO BE PERFORMED
                              NPLAN= 1 NRTIO= 3 LRTIO= 1
                RTIOS=   0.10   0.50   1.00

**********          **********          **********          **********          **********

                              SUB-AREA RUNOFF COMPUTATION

                    INFLOW HYDROGRAPH
                         ISTAQ    ICOMP    IECON    ITAPE     JPLT     JPRT    INAME   ISTAGE    IAUTO
                             1        0        0        0        0        0        1        0        0

                                HYDROGRAPH DATA
          IHYDC     IUHG    TAREA     SNAP   TRSDA    TRSPC    RATIO    ISNOW    ISAME    LOCAL
              1        1     1.36       0.     1.36     0.72      0.          0        1        0

                                PRECIP DATA
                    SPFE      PMS       R6      R12      R24      R48      R72      R96
                      0.    20.50   111.00   123.00   132.00   142.00       C.       0.

                                LOSS DATA
        LROPT    STRKR    DLTKR    RTIOL    ERAIN    STRKS    RTIOK    STRTL    CNSTL    ALSMX    RTIMP
            0       C.       0.     1.00       0.       0.     1.00     1.00     0.10       0.       0.

                              UNIT HYDROGRAPH DATA
                          TP=  2.22    CP=0.63    NTA=  C

                                RECESSION DATA
                          STRTQ=     2.00    QRCSN=     2.00    RTIOR= 1.00
APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 9.90 AND R= 8.25 INTERVALS

                UNIT HYDROGRAPH 49 END-OF-PERIOD ORDINATES, LAG=  2.22 HOURS, CP= C.63  VOL= 1.00
                    9.       34.       68.      107.      150.      190.      222.      243.      252.      247.
                  227.      201.      178.      158.      140.      124.      11C.       97.       86.       76.
                   67.       6C.       53.       47.       42.       37.       33.       29.       26.       23.
                   20.       18.       16.       14.       12.       11.       1C.        9.        8.        7.
                    6.        5.        5.        4.        4.        3.        3.        3.        2.

    0                                 END-OF-PERIOD FLOW
  MO.DA   HR.MN   PERIOD     RAIN    EXCS     LOSS      COMP Q      MO.DA   HR.MN   PERIOD     RAIN    EXCS     LOSS      COMP Q
  1.01    0.15         1     0.00      0.     0.00           2.      1.02    0.15       97     0.02      0.     0.02           5.
  1.01    0.30         2     0.00      0.     0.00           2.      1.02    0.30       98     0.02      0.     0.02           5.
  1.01    0.45         3     0.00      0.     0.00           2.
```

1.01	1.00	4	0.00	0.	0.00	2.	1.02	1.00	100	0.02	0.	0.02	4.
1.01	1.15	5	0.00	0.	0.00	2.	1.02	1.15	101	0.02	0.	0.02	4.
1.01	1.30	6	0.00	0.	0.00	2.	1.02	1.30	102	0.02	0.	0.02	4.
1.01	1.45	7	0.00	0.	0.00	2.	1.02	1.45	103	0.02	0.	0.02	4.
1.01	2.00	8	0.00	0.	0.00	2.	1.02	2.00	104	0.02	0.	0.02	3.
1.01	2.15	9	0.00	0.	0.00	2.	1.02	2.15	105	0.02	0.	0.02	3.
1.01	2.30	10	0.00	0.	0.00	2.	1.02	2.30	106	0.02	0.	0.02	3.
1.01	2.45	11	0.00	0.	0.00	2.	1.02	2.45	107	0.02	0.	0.02	3.
1.01	3.00	12	0.00	0.	0.00	2.	1.02	3.00	108	0.02	0.	0.02	3.
1.01	3.15	13	0.00	0.	0.00	2.	1.02	3.15	109	0.02	0.	0.02	3.
1.01	3.30	14	0.00	0.	0.00	2.	1.02	3.30	110	0.02	0.	0.02	3.
1.01	3.45	15	0.00	0.	0.00	2.	1.02	3.45	111	0.02	0.	0.02	3.
1.01	4.00	16	0.00	0.	0.00	2.	1.02	4.00	112	0.02	0.	0.02	2.
1.01	4.15	17	0.00	0.	0.00	2.	1.02	4.15	113	0.02	0.	0.02	2.
1.01	4.30	18	0.00	0.	0.00	2.	1.02	4.30	114	0.02	0.	0.02	2.
1.01	4.45	19	0.00	0.	0.00	2.	1.02	4.45	115	0.02	0.	0.02	2.
1.01	5.00	20	0.00	0.	0.00	2.	1.02	5.00	116	0.02	0.	0.02	2.
1.01	5.15	21	0.00	0.	0.00	2.	1.02	5.15	117	0.02	0.	0.02	2.
1.01	5.30	22	0.00	0.	0.00	2.	1.02	5.30	118	0.02	0.	0.02	2.
1.01	5.45	23	0.00	0.	0.00	2.	1.02	5.45	119	0.02	0.	0.02	2.
1.01	6.00	24	0.00	0.	0.00	2.	1.02	6.00	120	0.02	0.	0.02	2.
1.01	6.15	25	0.01	0.	0.01	2.	1.02	6.15	121	0.07	0.05	0.03	2.
1.01	6.30	26	0.01	0.	0.01	2.	1.02	6.30	122	0.07	0.05	0.03	4.
1.01	6.45	27	0.01	0.	0.01	2.	1.02	6.45	123	0.07	0.05	0.03	7.
1.01	7.00	28	0.01	0.	0.01	2.	1.02	7.00	124	0.07	0.05	0.03	13.
1.01	7.15	29	0.01	0.	0.01	2.	1.02	7.15	125	0.07	0.05	0.03	20.
1.01	7.30	30	0.01	0.	0.01	2.	1.02	7.30	126	0.07	0.05	0.03	29.
1.01	7.45	31	0.01	0.	0.01	2.	1.02	7.45	127	0.07	0.05	0.03	40.
1.01	8.00	32	0.01	0.	0.01	2.	1.02	8.00	128	0.07	0.05	0.03	52.
1.01	8.15	33	0.01	0.	0.01	2.	1.02	8.15	129	0.07	0.05	0.03	64.
1.01	8.30	34	0.01	0.	0.01	2.	1.02	8.30	130	0.07	0.05	0.03	76.
1.01	8.45	35	0.01	0.	0.01	2.	1.02	8.45	131	0.07	0.05	0.03	87.
1.01	9.00	36	0.01	0.	0.01	2.	1.02	9.00	132	0.07	0.05	0.03	97.
1.01	9.15	37	0.01	0.	0.01	2.	1.02	9.15	133	0.07	0.05	0.03	105.
1.01	9.30	38	0.01	0.	0.01	2.	1.02	9.30	134	0.07	0.05	0.03	113.
1.01	9.45	39	0.01	0.	0.01	2.	1.02	9.45	135	0.07	0.05	0.03	120.
1.01	10.00	40	0.01	0.	0.01	2.	1.02	10.00	136	0.07	0.05	0.03	126.
1.01	10.15	41	0.01	0.	0.01	2.	1.02	10.15	137	0.07	0.05	0.03	131.
1.01	10.30	42	0.01	0.	0.01	2.	1.02	10.30	138	0.07	0.05	0.03	136.
1.01	10.45	43	0.01	0.	0.01	2.	1.02	10.45	139	0.07	0.05	0.03	140.
1.01	11.00	44	0.01	0.	0.01	2.	1.02	11.00	140	0.07	0.05	0.03	144.
1.01	11.15	45	0.01	0.	0.01	2.	1.02	11.15	141	0.07	0.05	0.03	147.
1.01	11.30	46	0.01	0.	0.01	2.	1.02	11.30	142	0.07	0.05	0.03	150.
1.01	11.45	47	0.01	0.	0.01	2.	1.02	11.45	143	0.07	0.05	0.03	152.
1.01	12.00	48	0.01	0.	0.01	2.	1.02	12.00	144	0.07	0.05	0.03	155.
1.01	12.15	49	0.03	0.	0.03	2.	1.02	12.15	145	0.41	0.38	0.02	160.
1.01	12.30	50	0.03	0.	0.03	2.	1.02	12.30	146	0.41	0.38	0.02	173.
1.01	12.45	51	0.03	0.	0.03	2.	1.02	12.45	147	0.41	0.38	0.02	197.
1.01	13.00	52	0.03	0.	0.03	2.	1.02	13.00	148	0.41	0.38	0.02	234.
1.01	13.15	53	0.04	0.	0.04	2.	1.02	13.15	149	0.49	0.46	0.02	286.
1.01	13.30	54	0.04	0.	0.04	2.	1.02	13.30	150	0.49	0.46	0.02	354.
1.01	13.45	55	0.04	0.	0.04	2.	0.	0.	151	0.49	0.46	0.02	435.
1.01	14.00	56	0.04	0.	0.04	2.	0.	0.	152	0.49	0.46	0.02	525.
1.01	14.15	57	0.05	0.	0.05	2.	0.	0.	153	0.61	0.59	0.02	624.
1.01	14.30	58	0.05	0.	0.05	2.	0.	0.	154	0.61	0.59	0.02	727.
1.01	14.45	59	0.05	0.	0.05	2.	0.	0.	155	0.61	0.59	0.02	830.
1.01	15.00	60	0.05	0.	0.05	2.	0.	0.	156	0.61	0.59	0.02	931.
1.01	15.15	61	0.05	0.	0.05	2.	0.	0.	157	0.62	0.59	0.02	1030.
1.01	15.30	62	0.09	0.	0.09	2.	0.	0.	158	1.24	1.21	0.03	1132.
1.01	15.45	63	0.26	0.03	0.23	2.	0.	0.	159	3.47	3.45	0.03	1267.
1.01	16.00	64	0.07	0.04	0.03	3.	0.	0.	160	0.87	0.84	0.02	1449.
1.01	16.15	65	0.04	0.02	0.03	6.	0.	0.	161	0.57	0.55	0.02	1661.
1.01	16.30	66	0.04	0.02	0.03	9.	0.	0.	162	0.57	0.55	0.02	1883.
1.01	16.45	67	0.04	0.02	0.03	13.	0.	0.	163	0.57	0.55	0.02	2109.
1.01	17.00	68	0.04	0.02	0.03	18.	0.	0.	164	0.57	0.55	0.02	2308.

1.01	17.30	70	0.03	0.01	0.03	29.	0.	0.	166	0.45	0.42	0.02	2677.	
1.01	17.45	71	0.03	0.01	0.03	33.	0.	0.	167	0.45	0.42	0.02	2632.	
1.01	18.00	72	0.03	0.01	0.03	37.	0.	0.	168	0.45	0.42	0.02	2621.	
1.01	18.15	73	0.00	0.	0.00	39.	0.	0.	169	0.03	0.01	0.03	2545.	
1.01	18.30	74	0.00	0.	0.00	40.	0.	0.	170	0.03	0.01	0.03	2434.	
1.01	18.45	75	0.00	0.	0.00	40.	0.	0.	171	0.03	0.01	0.03	2309.	
1.01	19.00	76	0.00	0.	0.00	38.	0.	0.	172	0.03	0.01	0.03	2173.	
1.01	19.15	77	0.00	0.	0.00	37.	0.	0.	173	0.03	0.01	0.03	2026.	
1.01	19.30	78	0.00	0.	0.00	34.	0.	0.	174	0.03	0.01	0.03	1869.	
1.01	19.45	79	0.00	0.	0.00	32.	0.	0.	175	0.03	0.01	0.03	1707.	
1.01	20.00	80	0.00	0.	0.00	29.	0.	0.	176	0.03	0.01	0.03	1544.	
1.01	20.15	81	0.00	0.	0.00	26.	0.	0.	177	0.03	0.01	0.03	1384.	
1.01	20.30	82	0.00	0.	0.00	23.	0.	0.	178	0.03	0.01	0.03	1232.	
1.01	20.45	83	0.00	0.	0.00	21.	0.	0.	179	0.03	0.01	0.03	1095.	
1.01	21.00	84	0.00	0.	0.00	19.	0.	0.	180	0.03	0.01	0.03	973.	
1.01	21.15	85	0.00	0.	0.00	17.	0.	0.	181	0.03	0.01	0.03	865.	
1.01	21.30	86	0.00	0.	0.00	15.	0.	0.	182	0.03	0.01	0.03	770.	
1.01	21.45	87	0.00	0.	0.00	14.	0.	0.	183	0.03	0.01	0.03	685.	
1.01	22.00	88	0.00	0.	0.00	12.	0.	0.	184	0.03	0.01	0.03	610.	
1.01	22.15	89	0.00	0.	0.00	11.	0.	0.	185	0.03	0.01	0.03	544.	
1.01	22.30	90	0.00	0.	0.00	10.	0.	0.	186	0.03	0.01	0.03	485.	
1.01	22.45	91	0.00	0.	0.00	9.	0.	0.	187	0.03	0.01	0.03	433.	
1.01	23.00	92	0.00	0.	0.00	8.	0.	0.	188	0.03	0.01	0.03	387.	
1.01	23.15	93	0.00	0.	0.00	8.	0.	0.	189	0.03	0.01	0.03	346.	
1.01	23.30	94	0.00	0.	0.00	7.	0.	0.	190	0.03	0.01	0.03	310.	
1.01	23.45	95	0.00	0.	0.00	6.	0.	0.	191	0.03	0.01	0.03	278.	
1.02	0.	96	0.00	0.	0.00	6.	0.	0.	192	0.03	0.01	0.03	250.	
									SUM	20.87	17.25	3.62	58845.	
										(530.)(438.)(92.)(1666.3C)				

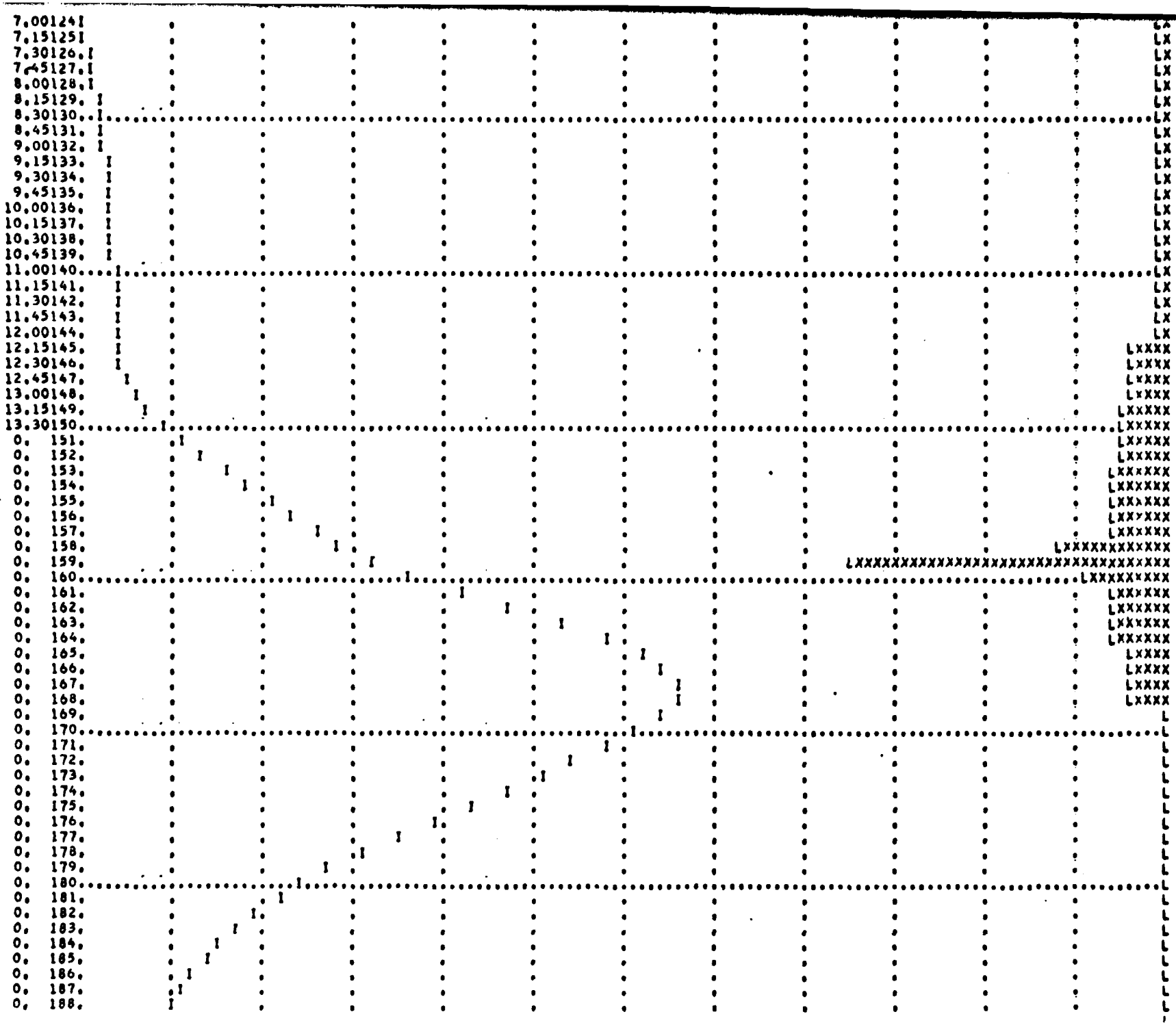
	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	2632.	1850.	603.	306.	58718.
CMS	75.	52.	17.	9.	1663.
INCHES		12.65	16.51	16.73	16.73
MM		321.43	419.31	425.06	425.06
AC-FT		917.	1197.	1213.	1213.
THOUS CU M		1132.	1476.	1496.	1496.

OVF

STATION 1

INFLOW(I), OUTFLOW(O) AND OBSERVED FLOW(*)

	0.	400.	800.	1200.	1600.	2000.	2400.	2800.	0.	0.	C.	C.	0.
											PRECIP(L) AND EXCESS(X)		
	0.	0.	C.	0.	0.	0.	0.	C.	4.	3.	2.	1.	0.
0.15	1I												
0.30	2I												
0.45	3I												
1.00	4I												
1.15	5I												
1.30	6I												
1.45	7I												
2.00	8I												
2.15	9I												
2.30	10I												
2.45	11I												
3.00	12I												
3.15	13I												
3.30	14I												
3.45	15I												
4.00	16I												
4.15	17I												
4.30	18I												
4.45	19I												
5.00	20I												
5.15	21I												
5.30	22I												
5.45	23I												
6.00	24I												
6.15	25I												
6.30	26I												
6.45	27I												
7.00	28I												
7.15	29I												
7.30	30I												
7.45	31I												
8.00	32I												
8.15	33I												
8.30	34I												
8.45	35I												
9.00	36I												
9.15	37I												
9.30	38I												
9.45	39I												
10.00	40I												
10.15	41I												
10.30	42I												
10.45	43I												
11.00	44I												
11.15	45I												
11.30	46I												
11.45	47I												
12.00	48I												
12.15	49I												
12.30	50I												
12.45	51I												
13.00	52I												
13.15	53I												
13.30	54I												
13.45	55I												
14.00	56I												


7.00124
7.15125
7.30126.
7.45127.
8.00128.
8.15129.
8.30130.
8.45131.
9.00132.
9.15133.
9.30134.
9.45135.
10.00136.
10.15137.
10.30138.
10.45139.
11.00140.
11.15141.
11.30142.
11.45143.
12.00144.
12.15145.
12.30146.
12.45147.
13.00148.
13.15149.
13.30150.
0. 151.
0. 152.
0. 153.
0. 154.
0. 155.
0. 156.
0. 157.
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0. 159.
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0. 178.
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0. 180.
0. 181.
0. 182.
0. 183.
0. 184.
0. 185.
0. 186.
0. 187.
0. 188.

OVN

HYDROGRAPH AT STA 1 FOR PLAN 1, RTIO 1

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	1.	1.	1.	2.	2.	3.
3.	4.	4.	4.	4.	4.	4.	3.	3.	3.
3.	2.	2.	2.	2.	2.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	1.	1.	2.	3.	4.	5.	6.	8.
9.	10.	11.	11.	12.	13.	13.	14.	14.	14.
15.	15.	15.	15.	16.	17.	20.	23.	29.	35.
43.	53.	62.	73.	83.	93.	103.	113.	127.	145.
166.	188.	210.	231.	247.	258.	263.	262.	255.	243.
231.	217.	203.	187.	171.	154.	138.	123.	109.	97.
87.	77.	69.	61.	54.	49.	43.	39.	35.	31.
28.	25.								

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	263.	185.	60.	31.	5872.
CMS	7.	5.	2.	1.	166.
INCHES		1.27	1.65	1.67	1.67
MM		32.14	41.93	42.51	42.51
AC-FT		92.	120.	121.	121.
THOLS CU M		113.	148.	150.	150.

HYDROGRAPH AT STA 1 FOR PLAN 1, RTIO 2

1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	2.	3.	4.	7.	9.	12.	14.
17.	18.	20.	20.	20.	19.	18.	17.	16.	14.
13.	12.	10.	9.	8.	8.	7.	6.	6.	5.
5.	4.	4.	3.	3.	3.	3.	3.	2.	2.
2.	2.	2.	2.	2.	2.	2.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	2.	4.	6.	10.	15.	20.	26.	32.	38.
43.	48.	53.	56.	60.	63.	65.	68.	70.	72.
73.	75.	76.	77.	80.	86.	99.	117.	143.	177.
217.	263.	312.	363.	415.	465.	515.	566.	633.	725.
830.	942.	1052.	1154.	1235.	1289.	1316.	1311.	1273.	1216.
1154.	1087.	1013.	935.	853.	772.	692.	616.	547.	487.
433.	385.	343.	305.	272.	243.	217.	194.	173.	155.
139.	125.								

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	1316.	925.	302.	153.	29359.
CMS	37.	26.	9.	4.	831.
INCHES		6.33	8.25	8.37	8.37
MM		160.72	209.65	212.53	212.53
AC-FT		459.	598.	607.	607.
THOLS CU M		566.	738.	748.	748.

HYDROGRAPH AT STA 1 FOR PLAN 1, RATIO 1

2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	3.	6.	9.	13.	18.	23.	29.
33.	37.	39.	40.	40.	38.	37.	34.	32.	29.
24.	23.	21.	19.	17.	15.	14.	12.	11.	10.
9.	8.	8.	7.	6.	6.	5.	5.	5.	4.
4.	4.	4.	3.	3.	3.	3.	3.	3.	3.
3.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	4.	7.	13.	20.	29.	40.	52.	64.	76.
87.	97.	105.	113.	120.	126.	131.	136.	140.	144.
147.	150.	152.	155.	160.	173.	197.	234.	286.	354.
435.	525.	624.	727.	830.	931.	1030.	1132.	1267.	1449.
1661.	1883.	2105.	2308.	2469.	2578.	2632.	2621.	2545.	2433.
2309.	2173.	2026.	1869.	1707.	1544.	1384.	1232.	1095.	973.
865.	770.	685.	610.	544.	485.	433.	387.	346.	310.
278.	250.								

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	2632.	1850.	603.	306.	58718.
CMS	75.	52.	17.	9.	1663.
INCHES		12.65	16.51	16.73	16.73
MM		321.43	419.31	425.06	425.06
AC-FT		917.	1197.	1213.	1213.
THOUS CU M		1132.	1476.	1496.	1496.

********** ********** ********** ********** **********

HYDROGRAPH ROUTING

ROUTED HYDROGRAPH

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
1	1	0	0	0	0	1	0	0

ROUTING DATA

QLOSS	CLOSS	AVG	IRES	ISAME	IOPT	IPMP	LSTR
0.	0.	0.	1	1	0	0	0

NSTPS	NSTOL	LAG	AMSKK	X	TSK	STORA	ISPRAT
1	0	0	0.	0.	0.	-1262.	-1

STAGE	1262.00	1263.00	1264.00	1264.50	1265.00
FLOW	0.	26.00	73.00	103.00	135.00

CAPACITY= 200. 260.

ELEVATION= 1262. 1265.

CREL	SPWID	COOW	EXPW	ELEVL	CCCL	CAREA	EXPL
1262.0	0.	0.	0.	0.	0.	0.	0.

DAM DATA

TOPEL	COOD	EXPD	DAMWIC
1265.0	2.6	1.5	90.

STATION 1, PLAN 1, RATIO 1

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	2.	2.	2.	2.	3.	3.	3.	3.	4.
4.	4.	5.	5.	5.	5.	6.	6.	7.	7.
8.	9.	11.	12.	14.	16.	18.	20.	23.	26.
32.	39.	47.	55.	64.	73.	84.	94.	104.	114.
122.	128.	133.	139.	144.	147.	147.	145.	140.	136.
133.	130.	126.	122.	118.	114.	110.	105.	101.	97.
93.	89.								

STORAGE

200.	200.	200.	200.	200.	200.	200.	200.	200.	200.
200.	200.	200.	200.	200.	200.	200.	200.	200.	200.
200.	200.	200.	200.	200.	200.	200.	200.	200.	200.
200.	200.	200.	200.	200.	200.	200.	200.	200.	200.
200.	200.	200.	200.	200.	200.	200.	200.	200.	200.
200.	200.	200.	200.	200.	200.	200.	200.	200.	200.
200.	200.	200.	200.	200.	200.	200.	200.	200.	200.
200.	200.	200.	201.	201.	201.	201.	201.	201.	201.
201.	201.	201.	201.	201.	201.	201.	201.	201.	201.
201.	201.	201.	201.	201.	201.	201.	201.	201.	201.
201.	201.	201.	201.	201.	201.	201.	201.	201.	201.
201.	201.	201.	201.	201.	201.	201.	201.	201.	201.
201.	201.	201.	201.	201.	201.	201.	201.	201.	201.
201.	201.	201.	202.	202.	202.	202.	202.	203.	203.
203.	203.	204.	204.	204.	204.	204.	205.	205.	206.
206.	207.	208.	209.	211.	212.	214.	216.	218.	220.
223.	226.	229.	232.	236.	240.	244.	247.	250.	253.
256.	258.	259.	261.	261.	262.	262.	261.	261.	260.
259.	258.	257.	256.	255.	253.	252.	251.	249.	248.
247.	245.								

STAGE

1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0
1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0
1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0
1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0
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1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0
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1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0
1262.1	1262.1	1262.1	1262.1	1262.1	1262.1	1262.1	1262.1	1262.1	1262.1
1262.2	1262.2	1262.2	1262.2	1262.2	1262.2	1262.2	1262.2	1262.3	1262.3
1262.3	1262.4	1262.4	1262.5	1262.5	1262.6	1262.7	1262.8	1262.9	1263.0
1263.1	1263.3	1263.4	1263.6	1263.8	1264.0	1264.2	1264.4	1264.5	1264.7
1264.8	1264.9	1265.0	1265.0	1265.1	1265.1	1265.1	1265.1	1265.0	1265.0
1265.0	1264.9	1264.9	1264.8	1264.7	1264.7	1264.6	1264.5	1264.5	1264.4
1264.3	1264.3								

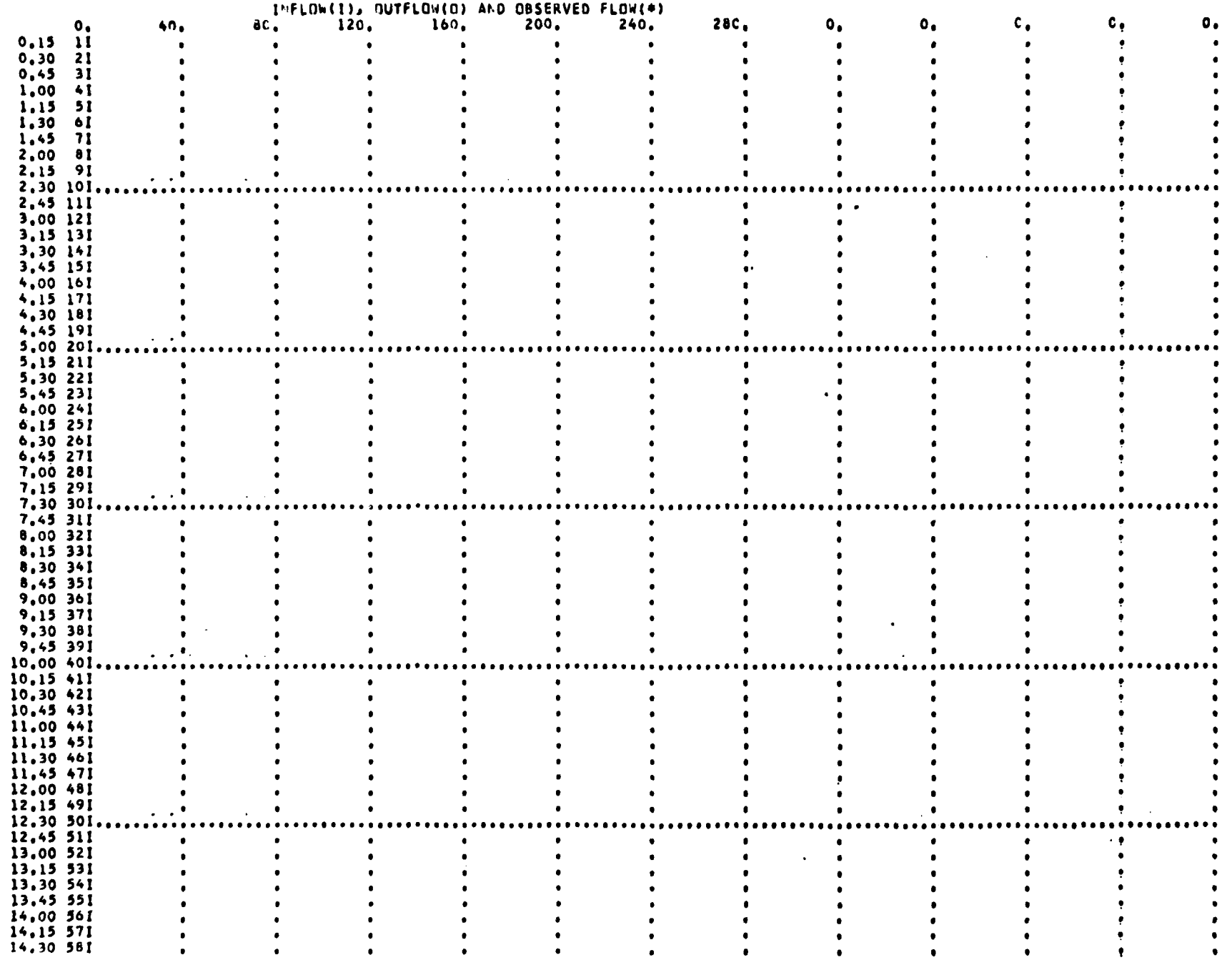
PEAK OUTFLOW IS 147. AT TIME 44.00 HOURS

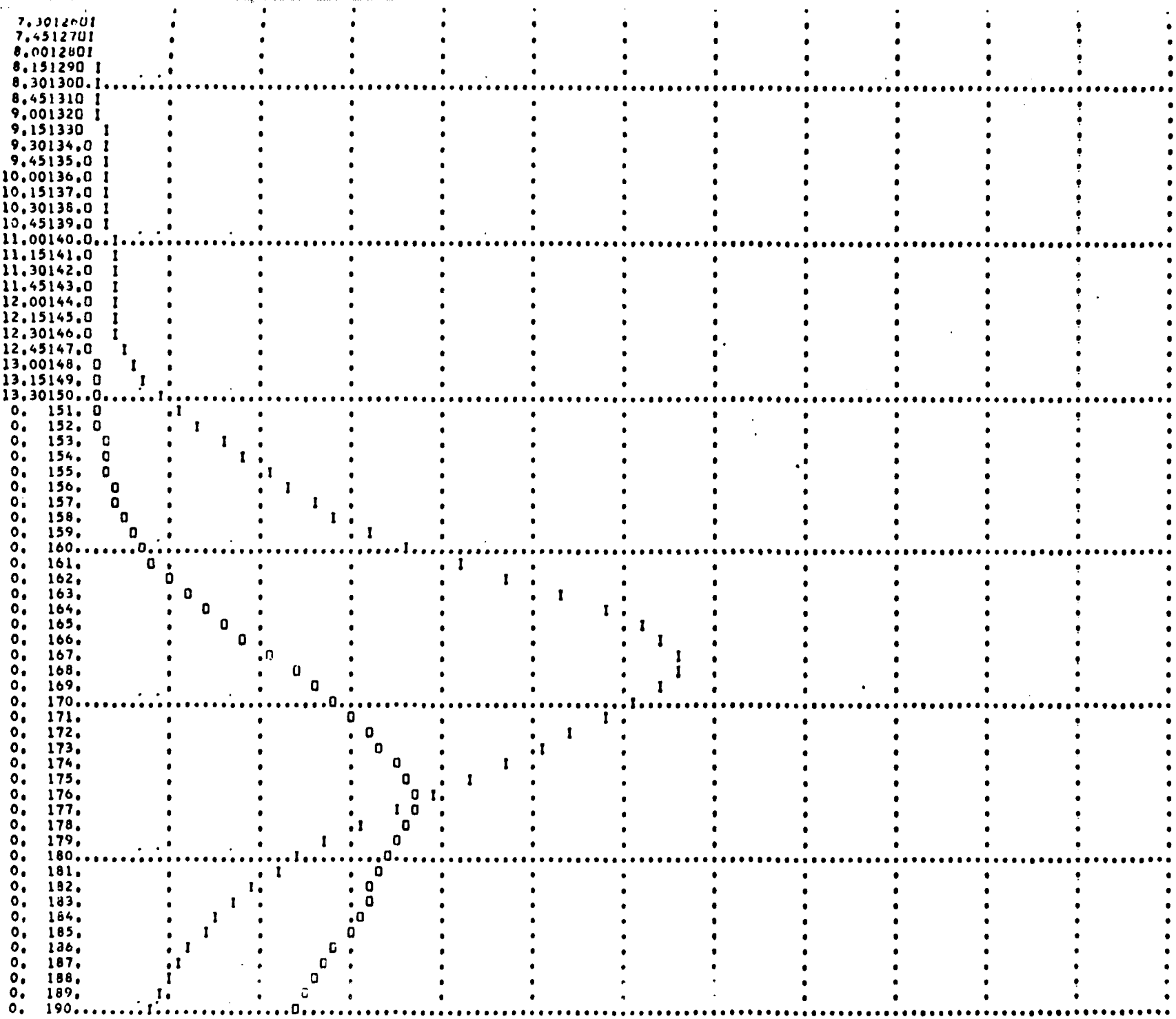
	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	147.	122.	38.	19.	3685.
CMS	4.	3.	1.	1.	104.
INCHES		0.84	1.04	1.05	1.05
MM		21.28	26.42	26.67	26.67
AC-FT		61.	75.	76.	76.
THOUS CU M		75.	93.	94.	94.

OVF

STATION 1

INFLOW(I), OUTFLOW(O) AND OBSERVED FLOW(*)




7.30126O1
7.451270I
8.001280I
8.151290 I
8.301300.I
8.451310 I
9.001320 I
9.151330 I
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9.45135.0 I
10.00136.0 I
10.15137.0 I
10.30138.0 I
10.45139.0 I
11.00140.0.I
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11.30142.0 I
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12.15145.0 I
12.30146.0 I
12.45147.0 I
13.00148. 0 I
13.15149. 0 I
13.30150..0.....I
0. 151. 0 I
0. 152. 0 I
0. 153. 0 I
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0. 155. 0 I
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0. 157. 0 I
0. 158. 0 I
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0. 160.....0.....I
0. 161. 0 I
0. 162. 0 I
0. 163. 0 I
0. 164. 0 I
0. 165. 0 I
0. 166. 0 I
0. 167. 0 I
0. 168. 0 I
0. 169. 0 I
0. 170.....0.....I
0. 171. 0 I
0. 172. 0 I
0. 173. 0 I
0. 174. 0 I
0. 175. 0 I
0. 176. 0 I
0. 177. 0 I
0. 178. 0 I
0. 179. 0 I
0. 180.....I.....0.....
0. 181. I 0
0. 182. I 0
0. 183. I 0
0. 184. I 0
0. 185. I 0
0. 186. I 0
0. 187. I 0
0. 188. I 0
0. 189. I 0
0. 190.....I.....0.....

OVN

STATION 1, PLAN 1, RATIC 2

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	2.
2.	3.	3.	3.	4.	4.	5.	5.	5.	6.
6.	6.	6.	6.	6.	6.	6.	6.	6.	6.
6.	6.	6.	6.	6.	6.	6.	6.	6.	6.
6.	5.	5.	5.	5.	5.	5.	5.	5.	5.
5.	4.	4.	4.	4.	4.	4.	4.	4.	4.
4.	4.	4.	4.	4.	4.	4.	5.	6.	6.
7.	8.	9.	11.	12.	13.	14.	16.	17.	19.
20.	22.	23.	24.	26.	28.	31.	35.	40.	45.
52.	61.	72.	88.	106.	127.	176.	269.	372.	480.
593.	711.	833.	953.	1064.	1157.	1227.	1269.	1280.	1263.
1225.	1175.	1115.	1049.	978.	903.	828.	753.	682.	615.
555.	500.	450.	406.	366.	331.	299.	271.	247.	224.
205.	188.								

STORAGE

200.	200.	200.	200.	200.	200.	200.	200.	200.	200.
200.	200.	200.	200.	200.	200.	200.	200.	200.	200.
200.	200.	200.	200.	200.	200.	200.	200.	200.	200.
200.	200.	200.	200.	200.	200.	200.	200.	200.	201.
201.	201.	201.	201.	201.	201.	201.	201.	201.	201.
201.	201.	201.	201.	201.	201.	201.	201.	201.	201.
201.	201.	201.	201.	201.	201.	201.	201.	201.	201.
202.	202.	202.	203.	203.	203.	204.	204.	204.	204.
204.	205.	205.	205.	205.	205.	205.	205.	205.	205.
205.	205.	205.	205.	205.	205.	205.	204.	204.	204.
204.	204.	204.	204.	204.	204.	204.	204.	204.	204.
204.	203.	203.	203.	203.	203.	203.	203.	203.	203.
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206.	206.	207.	208.	209.	210.	211.	212.	213.	214.
215.	217.	218.	219.	220.	221.	222.	224.	226.	228.
231.	235.	240.	245.	251.	258.	265.	271.	277.	282.
287.	292.	297.	301.	305.	308.	310.	312.	312.	311.
310.	309.	307.	304.	302.	299.	296.	294.	291.	288.
286.	283.	281.	279.	277.	275.	273.	271.	270.	268.
267.	266.								

STAGE

1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0
1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0
1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0
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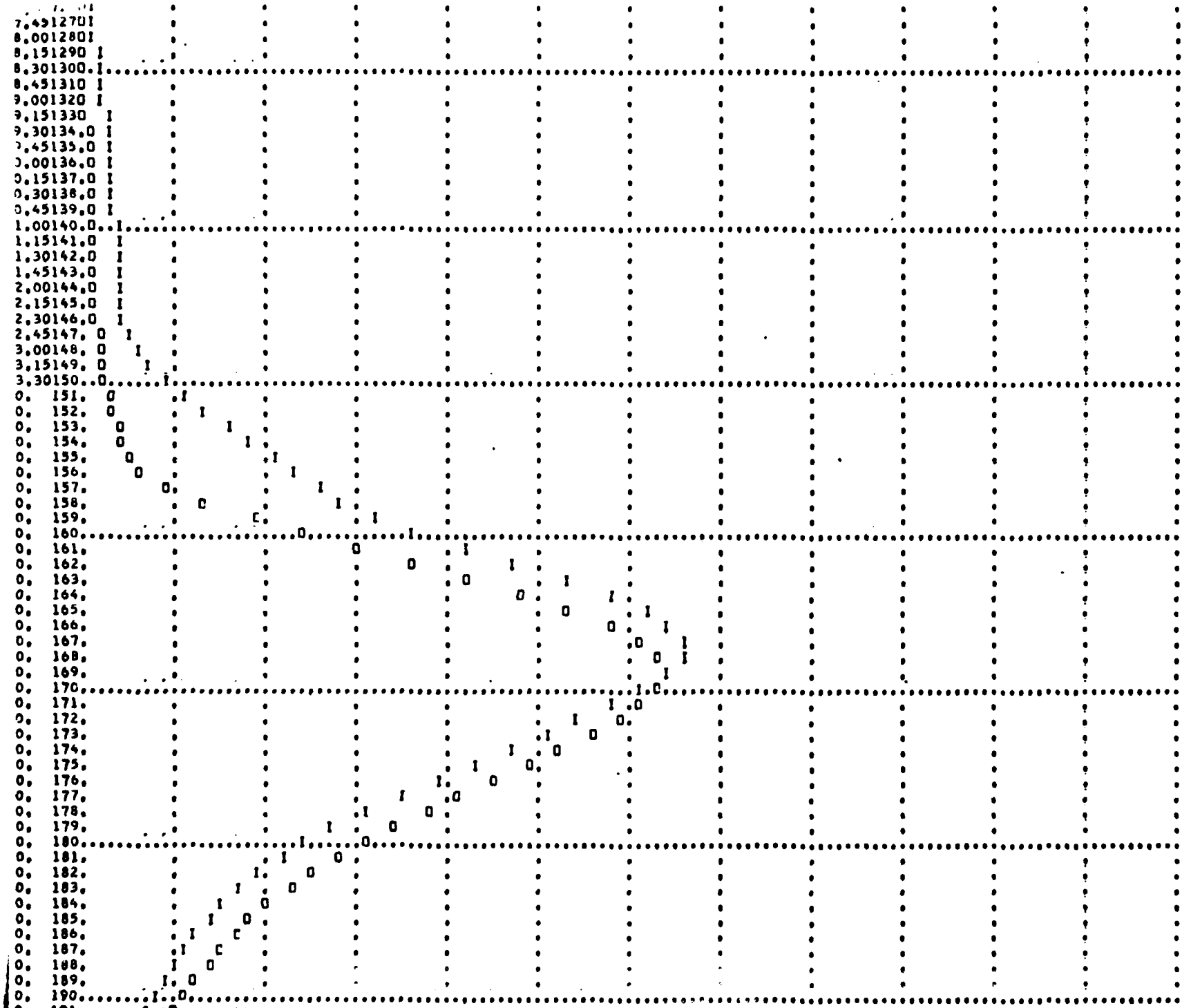
1262.2	1262.2	1262.2	1262.2	1262.2	1262.2	1262.2	1262.2	1262.2	1262.1
				[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

1262.3	1262.3	1262.4	1262.4	1262.5	1262.5	1262.6	1262.6	1262.7	1262.7
1262.8	1262.8	1262.9	1262.9	1263.0	1263.1	1263.1	1263.2	1263.3	1263.4
1263.6	1263.8	1264.0	1264.2	1264.5	1264.9	1265.2	1265.6	1265.8	1266.1
1266.4	1266.6	1266.8	1267.0	1267.2	1267.4	1267.5	1267.6	1267.6	1267.6
1267.5	1267.4	1267.3	1267.2	1267.1	1267.0	1266.8	1266.7	1266.5	1266.4
1266.3	1266.2	1266.0	1265.9	1265.8	1265.7	1265.7	1265.6	1265.5	1265.4
1265.3	1265.3								

PEAK OUTFLOW IS 1280. AT TIME 42.25 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	1280.	901.	271.	136.	26187.
CMS	36.	26.	8.	4.	742.
INCHES		6.16	7.41	7.46	7.46
MM		156.51	188.29	189.57	189.57
AC-FT		447.	537.	541.	541.
THOUS CU M		551.	663.	667.	667.



OVN

STATION 1, PLAN 1, RATIO 3

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	3.	4.
4.	5.	6.	7.	8.	9.	9.	10.	11.	11.
12.	12.	12.	12.	13.	13.	13.	13.	13.	13.
13.	12.	12.	12.	12.	12.	12.	12.	11.	11.
11.	11.	11.	10.	10.	10.	10.	10.	10.	9.
9.	9.	9.	9.	8.	8.	8.	8.	8.	8.
8.	7.	7.	7.	8.	8.	9.	10.	11.	13.
14.	16.	19.	21.	24.	26.	31.	36.	41.	46.
50.	55.	60.	64.	68.	73.	80.	88.	98.	112.
130.	183.	286.	412.	546.	678.	805.	927.	1051.	1197.
1373.	1576.	1796.	2019.	2225.	2395.	2517.	2581.	2582.	2528.
2437.	2324.	2197.	2058.	1910.	1757.	1603.	1451.	1307.	1174.
1054.	946.	849.	762.	685.	616.	555.	500.	451.	408.
369.	335.								

STORAGE

200.	200.	200.	200.	200.	200.	200.	200.	200.	200.
200.	200.	200.	200.	201.	201.	201.	201.	201.	201.
201.	201.	201.	201.	201.	201.	201.	201.	201.	201.
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201.	201.	201.	201.	201.	201.	202.	202.	202.	203.
203.	204.	205.	205.	206.	207.	207.	208.	208.	209.
209.	209.	209.	210.	210.	210.	210.	210.	210.	210.
210.	210.	209.	209.	209.	209.	209.	209.	209.	209.
208.	208.	208.	208.	208.	208.	208.	207.	207.	207.
207.	207.	207.	207.	207.	206.	206.	206.	206.	206.
206.	206.	206.	206.	206.	206.	207.	208.	209.	210.
211.	213.	214.	216.	218.	220.	222.	224.	226.	228.
230.	232.	234.	236.	238.	240.	242.	245.	248.	253.
259.	265.	272.	279.	285.	291.	296.	300.	304.	309.
315.	321.	327.	334.	339.	343.	347.	348.	348.	347.
344.	342.	338.	335.	331.	326.	322.	317.	313.	309.
304.	301.	297.	294.	291.	288.	286.	283.	281.	279.
277.	275.								

STAGE

1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0
1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0	1262.0
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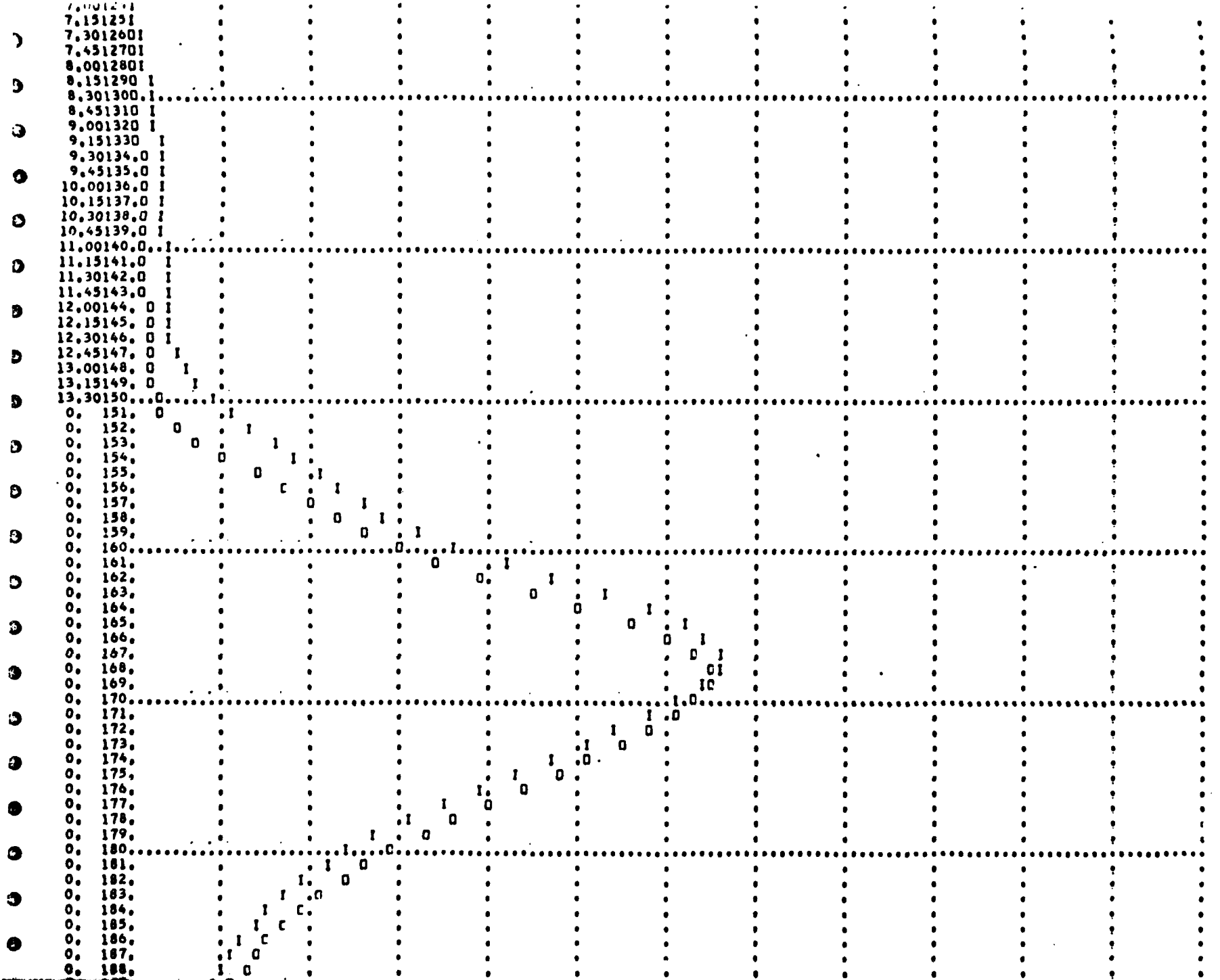
1262.6	1262.6	1262.7	1262.8	1262.9	1263.0	1263.1	1263.2	1263.3	1263.4
1263.5	1263.6	1263.7	1263.8	1263.9	1264.0	1264.1	1264.3	1264.4	1264.6
1264.9	1265.3	1265.6	1265.9	1266.3	1266.5	1266.8	1267.0	1267.2	1267.5
1267.7	1268.0	1268.4	1268.7	1269.0	1269.2	1269.3	1269.4	1269.4	1269.3
1269.2	1269.1	1268.9	1268.7	1268.5	1268.3	1268.1	1267.9	1267.6	1267.4
1267.2	1267.0	1266.9	1266.7	1266.5	1266.4	1266.3	1266.2	1266.0	1265.9
1265.8	1265.8								

PEAK OUTFLOW IS 2582. AT TIME 42.25 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	2582.	1835.	570.	287.	55092.
CMS	73.	52.	16.	8.	1560.
INCHES		12.55	15.60	15.70	15.70
MM		318.86	396.25	398.81	398.81
AC-FT		910.	1131.	1138.	1138.
THOUS CU M		1123.	1395.	1404.	1404.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0. 181. I 0
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0. 183. I .0
0. 184. I C
0. 185. I C
0. 186. I C
0. 187. I 0
0. 188. I 0

PEAK FLOW AND STORAGE (END OF PERIOD) SUMMARY FORMULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND (CUBIC METERS PER SECOND)
AREA IN SQUARE MILES (SQUARE KILOMETERS)

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO FLOWS RATIO 1 0.10	 RATIO 2 0.50	 RATIO 3 1.00
HYDROGRAPH AT	1 (0.3CE 19)	1.36	1	263. (7.45)	1316. (37.26)	2632. (74.53)
ROUTED TO	1 (0.3CE 19)	1.36	1	147. (4.17)	1280. (36.25)	2582. (73.12)

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	1262.00	1262.00	1265.00
STORAGE	200.	200.	260.
OUTFLOW	0.	0.	135.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
0.10	1265.09	0.09	262.	147.	1.75	44.00	0.
0.50	1267.60	2.60	312.	1280.	9.00	42.25	0.
1.00	1269.41	4.41	348.	2582.	10.25	42.25	0.

APPENDIX D
REFERENCES

APPENDIX D

REFERENCES

1) U.S. Department of Commerce; Weather Bureau; Hydrometeorological Report No. 33 - Seasonal Variation of the Probable Maximum Precipitation East of the 105th Meridian for Areas from 10 to 1,000 Square Miles and Durations of 6, 12, 24, and 48 Hours, April 1956.

2) H.W. King and E.F. Brater, Handbook of Hydraulics, 5th edition, McGraw-Hill, 1963.

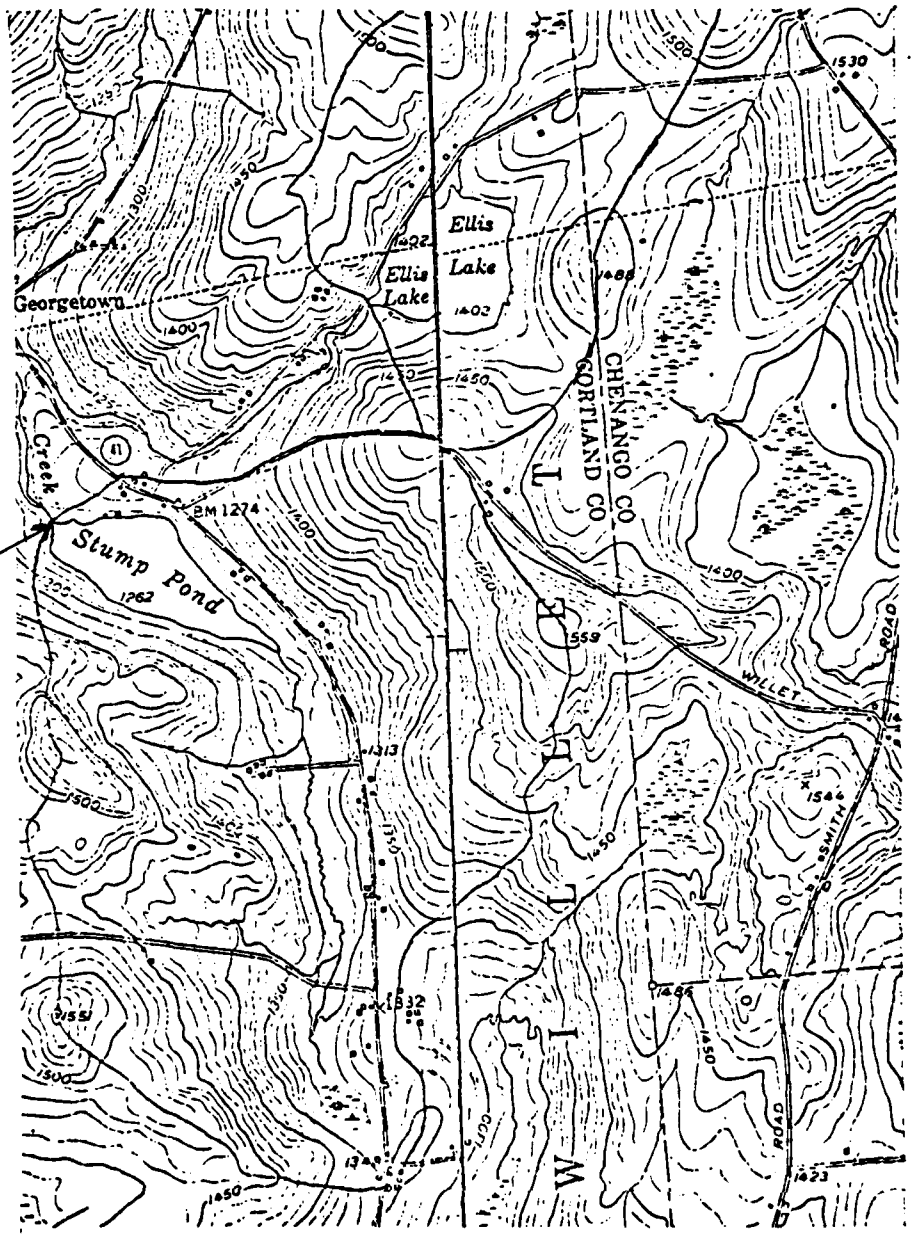
3) University of the State of New York, Geology of New York, Education Leaflet 20, Reprinted 1973.

4) Elwyn E. Seelye, Design, 3rd edition, John Wiley and Sons, Inc., 1960.

5) U.S. Department of the Interior, Bureau of Reclamations; Design of Small Dams, 2nd edition (rev. reprint), 1977.

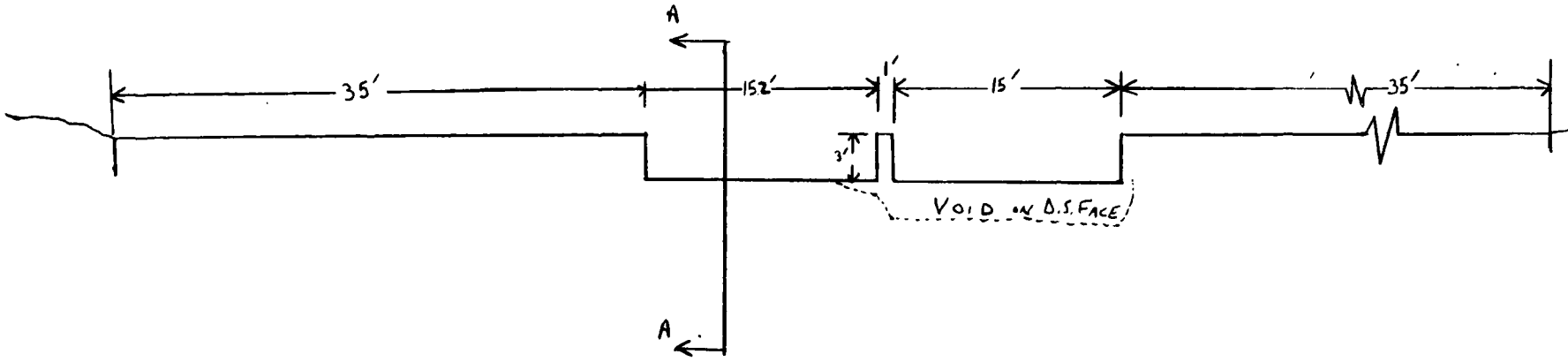
APPENDIX E
DRAWINGS

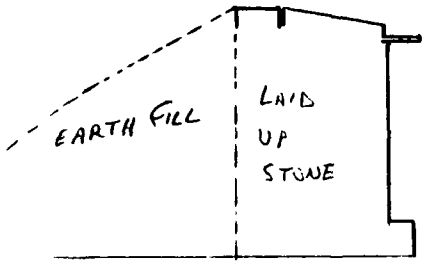
VICINITY MAP
STUMP POND DAM
I.D. No. NY 746



TOPOGRAPHIC MAP
STUMP POND DAM
I.D. No. NY 746

SCALE 1"=10'





SECTION A-A

STUMP POND DAM

SKETCH BASED ON FIELD MEASUREMENTS


DAT
FILM